

Wide Input 2A Step-Down Converter

● Features

- 2A Output Current
- 4.75V to 18V Input Range
- 5 μ A Shutdown Supply Current
- 500kHz Switching Frequency
- Adjustable Output Voltage
- Cycle-by-Cycle Current Limit Protection
- Thermal Shutdown Protection
- Frequency Foldback at Short Circuit
- Stability with Wide Range of Capacitors, Including Low ESR Ceramic Capacitors

● Applications

- TFT LCD Monitors
- Portable DVDs
- Car-Powered or Battery-Powered Equipments
- Set-Top Boxes
- Telecom Power Supplies
- DSL and Cable Modems and Routers
- Termination Supplies

● Application Information

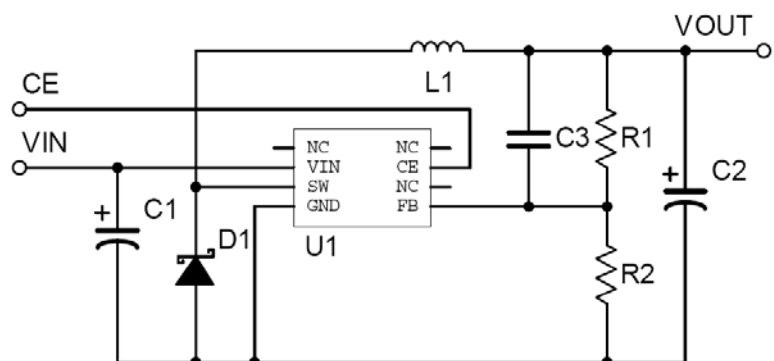
- 1 C1 Capacitor MLCC 10 μ F; SMD 0805
- 2 C2 Capacitor Tantalum Capacitor; 25V/22 μ F; SMD
- 3 C3 Capacitor MLCC 100pF; SMD 0805
- 4 D1 Diode SS34; 40V, 3A; SMD
- 6 L1 Inductor 22 μ H; 3A; SMD, Shielding
- 7 IC1 IC FS1060; SMD SOP-8
- 8 R1 Resistor SMD 0805; 9.1K; 1%
- 9 R2 Resistor SMD 0805; 3K; 1%

● General Description

The FS1060 is a current-mode step-down DC/DC converter that generates up to 2A of output current at 410kHz switching frequency. The device utilizes special process for operation with input voltages up to 18V.

Consuming only 8 μ A in shutdown mode, the FS1060 is highly efficient with peak operating efficiency at 95%. Protection features include cycle-by-cycle current limit, thermal shutdown, and frequency foldback at short circuit.

The FS1060 is available in a SOP-8 package and requires very few external devices for operation

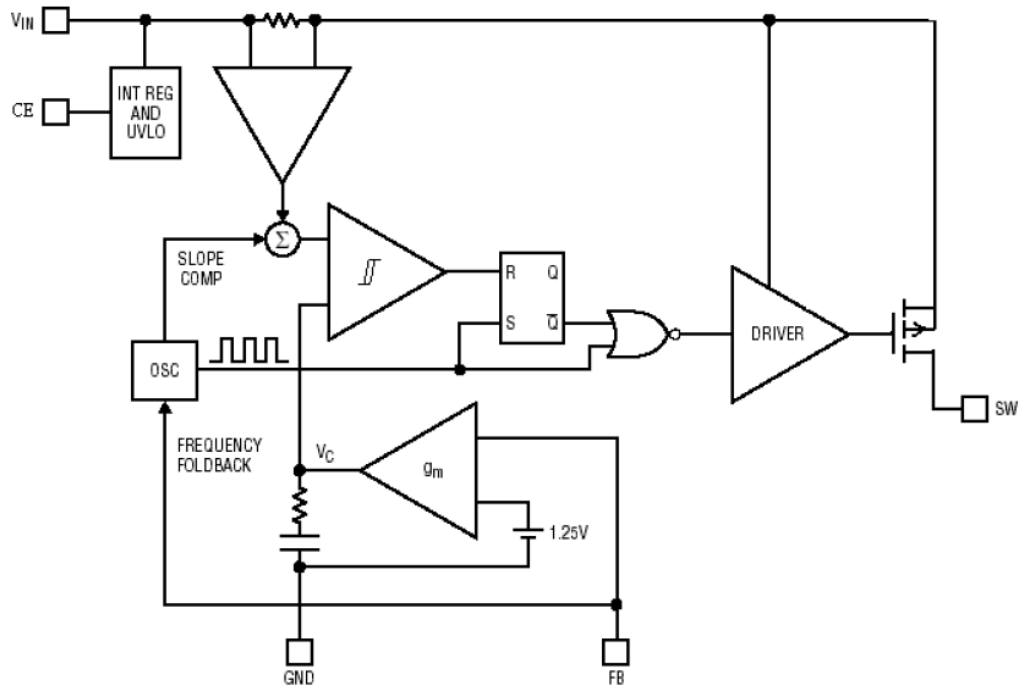


● Pin Configuration

FS1060

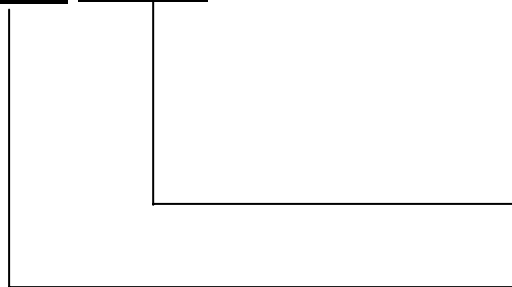
Pin No.	SOP8
①	NC
②	IN
③	SW
④	GND
⑤	FB
⑥	NC
⑦	EN
⑧	N/C

- **Functional Block Diagram**



- **Ordering information**

FS1060 - □ □



Package Code
 SQ : SOP8
 Indicates the product number

- **Absolute Maximum Ratings @ $T_A=25^\circ\text{C}$ unless otherwise noted**

FS1060

Parameter	Symbol	Ratings	Unit
VIN	VIN	18	V
SW Voltage	VSW	VIN+1	V
BS Voltage	VBS	VSW – 0.3 to VSW + 8	V
EN, FB, COMP Voltage	VEN, VFB, VCOMP	-0.3 to 6	V
Maximum Power Dissipation	PD	800	mW
Junction Temperature	TJ	125	°C
Operating Temperature Range (Note 2)	TOPR	-40 to 85	°C
Storage Temperature Range	TSTG	-65 to +150	°C
Lead Temperature (Soldering, 10 sec)	TLEAD	300	°C

● **Electrical Characteristics** @T_A=25°C unless otherwise noted

Symbol	Item	Conditions	Min.	Typ.	Max.	Unit
VUVLO	Under Voltage Lockout			3.35	3.6	V
VFB	Feedback Voltage		1.225	1.25	1.275	V
IFB	FB Pin Bias Current	VFB=1.25V		150	600	nA
IQ	Supply Current	VFB=1.3V, VCE=VIN		2		mA
	Quiescent Current in Shutdown	VCE=0V		2	5	µA
ΔVFB/ΔV	Reference Line Regulation	VIN=5V to 20V		0.08		%/V
ΔVFB/ΔT	Feedback Voltage Temperature Coefficient	-40°C ≤ T _{opt} ≤ 85°C		±100		ppm/°C
FOSC_MAX	Oscillator Frequency	VFB=1.1V		500		KHz
FOSCTH	Frequency Shift Threshold on FB Pin	FSW=200K		0.44		V
DMAX	Max Duty Cycle			97		%
ILIMIT	Switch Current Limit			2.5		A
Rds_on	Static P-Channel MOSFET On State Resistance			90*		mΩ
ISW	Switch Leakage Current				1	µA
ICEH	CE "H" Input Current	VCE = 3V		6.7	15	µA
ICEL	CE "L" Input Current	VCE = 0V		0.03	0.1	µA
VCEH	CE "H" Input Voltage	VIN = 12V	1.8			V
VCEL	CE "L" Input Voltage	VIN = 12V			0.4	V

● **Typical Performance Characteristics**

FS1060

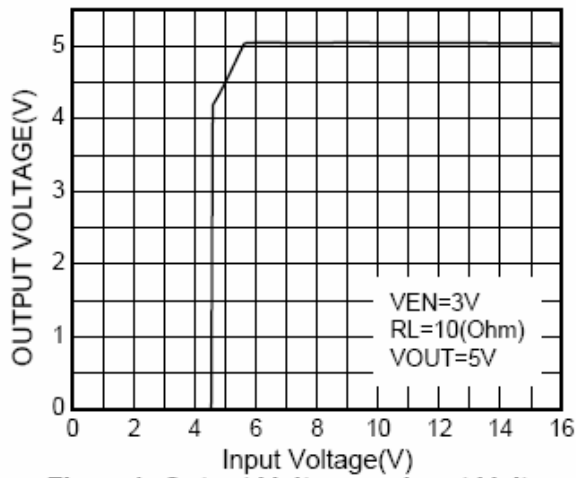


Figure1: Output Voltage vs Input Voltage

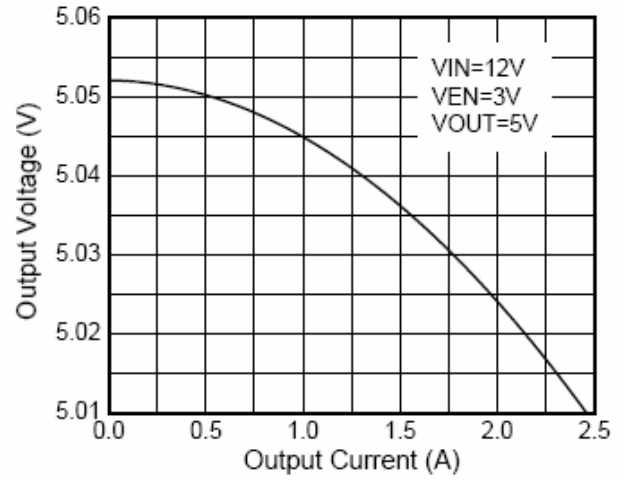


Figure2: Output Voltage vs Output Current

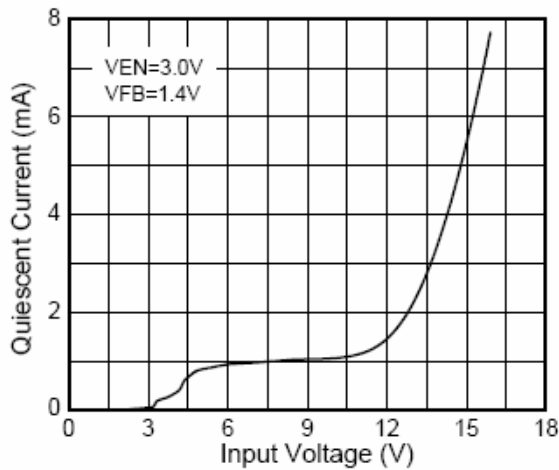


Figure3: Quiescent Current vs Input Voltage

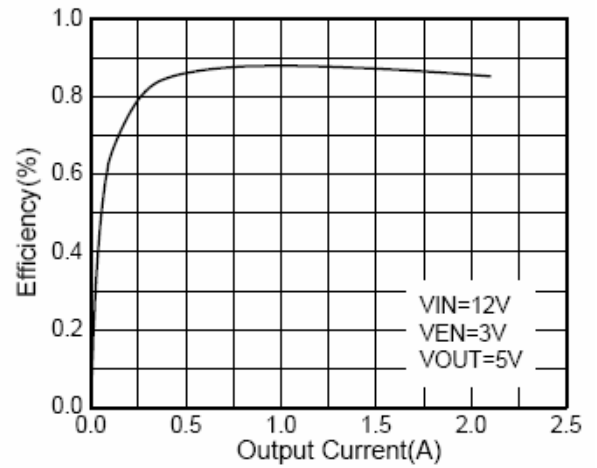


Figure4: Efficiency vs output current

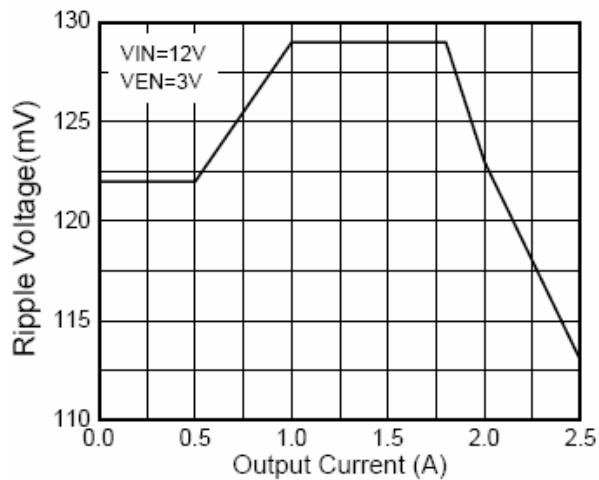


Figure5: Ripple Voltage vs Output Current

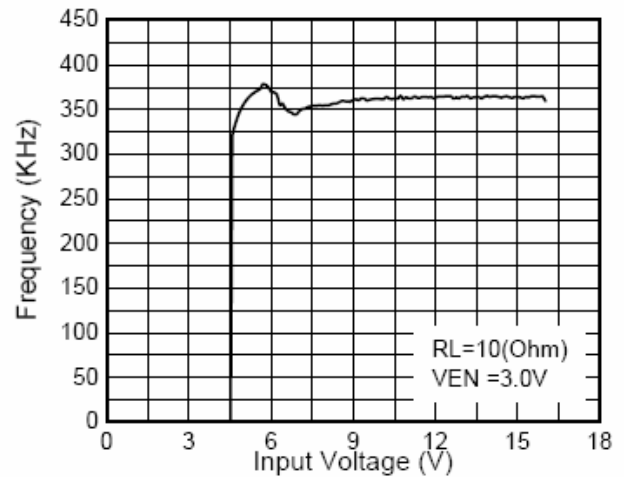


Figure6: Frequency vs Input Voltage

FS1060

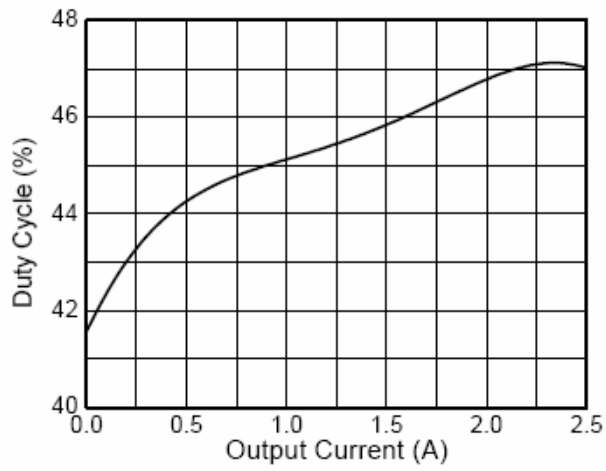


Figure7: Duty Cycle vs Output Current

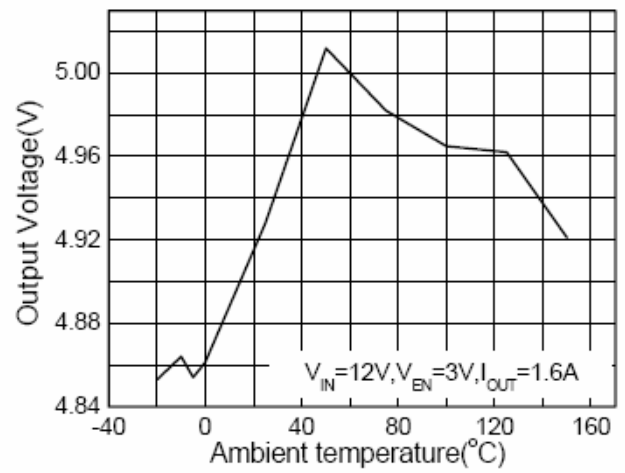


Figure8: Ripple Voltage vs Temperature

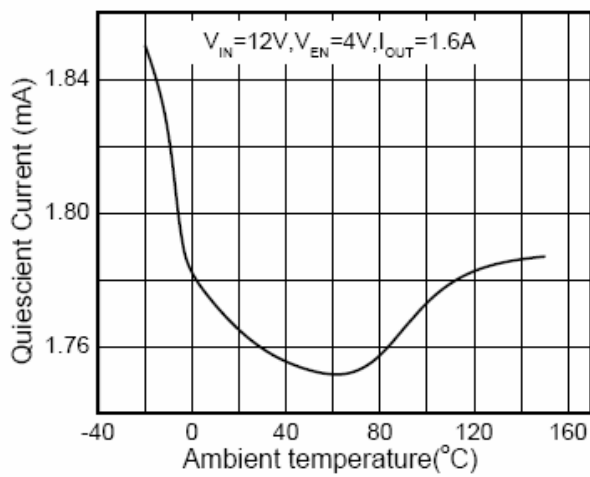


Figure9: Quiescent Current vs. Temperature